REMARKS

Claims 1-42 are pending in the application. Claims 1-42 are rejected. No claims are allowed.

Claims 1, 7, 13-15, 28 and 32 have been amended to more particularly define the subject matter Applicants consider their invention. Specifically, claim 1 has been amended to incorporate subject matter of claim 20, which has accordingly been cancelled. Claims 7, 13-15, 28 and 32 have been amended to correct minor inadvertent errors and informalities. Claims 18, 19, 21-26, 29, 30, 33, 34, 37, 38, 40 and 42 have been cancelled without prejudice or disclaimer Applicants reserve the right to file one or more continuation, divisional and/or continuation-in-part applications directed to the cancelled subject matter and/or any other subject matter disclosed in the instant specification.

No new matter has been introduced by this amendment.

Claims 1-17, 27, 28, 31, 32, 35, 36, 39 and 41 are presented for further proceedings. Reconsideration of the claim rejections and allowance of the pending claims in view of the following remarks are respectfully requested.

Claim Rejections – 35 U.S.C. § 103

a. Claims 1, 2, 5, 7-11, 13, 18, 20-22 and 35-42 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Sampson et al., GB 2332516 ("Sampson") in view of Nilsen et al., US 5,487,973 ("Nilsen"). With regard to claim 1, the only remaining independent claim, the Examiner believes that Figure 1 of Sampson substantially discloses the claimed invention. In particular, the Examiner states that Figure 1 of Sampson shows "wherein said first component comprising cDNA reagent is

simultaneously hybridized in a single step to both said microarray and to said second component, while said first component comprising cDNA is on said microarray (Figure 1, step 2, where the cDNA reagent is combined with a second component; p. 9, lines 28 to p. 10, line 9, where tagged cDNA is hybridized to the surface of an array and the signal generated is detected; and where the hybridization between the cDNA and the array occurs as a single step)." The Examiner acknowledges that Sampson does not teach use of dendrimers, but assert that it would have been obvious to use the dendrimers of Nilsen in the method of Sampson.

Claims 18, 20, 21, 22, 37, 38, 40 and 42 have been cancelled, thereby rendering the rejection with respect to this claim moot. With regard to the remaining claims, Applicants respectfully traverse this basis for rejection.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), *viz.*, (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. "[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). To establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art. *See In re Royka*, 490 F.2d 981, 985 (CCPA 1974). Furthermore, although the analysis need not identify explicit teachings directed to the claimed subject matter, "it can be important to identify a reason that would have prompted a person of ordinary skill

in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). As such, "'there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" *Id.* (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Claim 1 (and thus claims 2, 5, 7-11, 13, 35, 36, 39, 41 dependent thereon) is directed to a method for detection and assay on a microarray, said method comprising, *inter alia*, mixing a) cDNA having a capture sequence with b) a dendrimer having at least one first arm comprising a label and at least one second arm having a second nucleotide sequence complementary to the capture sequence on c) a microarray comprising a particular first nucleotide sequence capable of binding to the cDNA. The mixture and microarray are mixed for times and temperatures sufficient to allow cDNA to bind to both the microarray and dendrimer. Although the times and temperatures may be different for each binding, all the mixing of components is done on the microarray. Thus, contrary to the Examiner's claim interpretation, no separate prehybridization is performed. This is what is meant in the claim by "single step."

Contrary to the Examiner's assertion, Sampson does not disclose hybridization of cDNA in a single step to both a microarray and to a second component. Figure 1 of Sampson shows incorporation of repeating signal amplification sequences onto cDNA using rolling circle DNA synthesis. In step 1, cDNA is synthesized from mRNA using a bi-directional primer. In step 2, the bi-directional primer is used to synthesize repeating signal amplification sequences using a circular DNA template (the so-called second component). In step 3, the cDNA is hybridized to an array. Steps 2 and 3 are clearly not

done simultaneously in a single step. Indeed, it is impossible to perform steps 2 and 3 together since the conditions for DNA replication are different from those for array hybridization. Thus even if one of skill in the art would have sought to replace the circular DNA template with a dendrimer (which Applicants dispute), the hybridization of the dendrimer to the bi-directional primer would occur prior to hybridization of cDNA to the array, and thus not in a single step. *See Royka*, 490 F.2d at 985.

In rejecting claim 20, the subject matter of which has been incorporated into claims 1, the Examiner states that Sampson teaches an embodiment wherein the mixing of the first (cDNA) and second (circular DNA template) components is conducted on the microarray (citing to page 10, lines 10-16). While this may be true, this embodiment still does not teach hybridization of cDNA in a single step to both a microarray and to a second component. Sampson clearly states that "some applications may dictate that the signal amplification sequence be polymerized ***subsequent to hybridization*** onto the surface-bound probe." *See* page 10, lines 13-15 (emphasis added). Thus, as with Figure 1, this embodiment of Sampson includes a prehybridization step (in this case cDNA to array), which is not hybridization in a "single step" as that term is used in claim 1.

Accordingly, Applicants submit that claims 1, 2, 5, 7-11, 13, 35, 36, 39, 41 are not unpatentable over Sampson in view of Nilsen, and reconsideration of this basis for rejection is respectfully requested.

b. Claims 3, 4, 16, 17, 19 and 23-26 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Sampson in view of Nilsen as applied above, and further in view of Combates et al., US 6,045,998 ("Combates"). Claims 19 and 23-26 have been cancelled, thereby rendering the rejection with respect to this claim moot. With regard to

the remaining claims, each of claims 3, 4, 16 and 17 depends from claim 1. As discussed above with respect to the rejection of claim 1, the combination of Sampson and Nilsen would not have suggested hybridization of cDNA in a single step to both a microarray and dendrimer. Furthermore, the Examiner has pointed to nothing in Combates that remedies the deficiencies of Sampson and Nilsen in this respect. As such, the combination of Combates with Sampson and Nilsen cannot render the claimed invention obvious. *See In re Rijckaert*, 9 F.3d 1531, 1533 (Fed Cir. 1993).

Accordingly, Applicants submit that claims 3, 4, 16 and 17 are not unpatentable over Sampson in view of Nilsen, and further in view of Combates, and reconsideration of this basis for rejection is respectfully requested.

c. Claim 6 is rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Sampson in view of Nilsen as applied above, and further in view of Kool et al., US 5,714,320 ("Kool"). Claim 6 depends from claim 1. As discussed above with respect to the rejection of claim 1, the combination of Sampson and Nilsen would not have suggested hybridization of cDNA in a single step to both a microarray and dendrimer. Furthermore, the Examiner has pointed to nothing in Kool that remedies the deficiencies of Sampson and Nilsen in this respect. As such, the combination of Kool with Sampson and Nilsen cannot render the claimed invention obvious. *See Rijckaert*, 9 F.3d at 1533.

Accordingly, Applicants submit that claim 6 is not unpatentable over Sampson in view of Nilsen, and further in view of Kool, and reconsideration of this basis for rejection is respectfully requested.

d. Claims 12-15 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Sampson in view of Nilsen as applied above, and further in view of

Wang et al., US 6,004,775 ("Wang"). Claims 12-15 depend from claim 1. As discussed above with respect to the rejection of claim 1, the combination of Sampson and Nilsen would not have suggested hybridization of cDNA in a single step to both a microarray and dendrimer. Furthermore, the Examiner has pointed to nothing in Wang that remedies the deficiencies of Sampson and Nilsen in this respect. As such, the combination of Wang with Sampson and Nilsen cannot render the claimed invention obvious. *See Rijckaert*, 9 F.3d at 1533.

Accordingly, Applicants submit that claims 12-15 are not unpatentable over Sampson in view of Nilsen, and further in view of Wang, and reconsideration of this basis for rejection is respectfully requested.

e. Claims 27-34 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Sampson in view of Nilsen as applied above, and further in view of Brenner et al., US 5,846,719 ("Brenner"). Claims 29, 30, 33 and 34 have been cancelled, thereby rendering the rejection with respect to this claim moot. With regard to the remaining claims, each of claims 27, 28, 31 and 32 depends from claim 1. As discussed above with respect to the rejection of claim 1, the combination of Sampson and Nilsen would not have suggested hybridization of cDNA in a single step to both a microarray and dendrimer. Furthermore, the Examiner has pointed to nothing in Brenner that remedies the deficiencies of Sampson and Nilsen in this respect. As such, the combination of Brenner with Sampson and Nilsen cannot render the claimed invention obvious. *See Rijckaert*, 9 F.3d at 1533.

Accordingly, Applicants submit that claims 27, 28, 31 and 32 are not unpatentable over Sampson in view of Nilsen, and further in view of Brenner, and reconsideration of this basis for rejection is respectfully requested.

CONCLUSION

It is believed that claims 1-17, 27, 28, 31, 32, 35, 36, 39 and 41 are now in condition for allowance, early notice of which would be appreciated. If any additional fees are due, the Commissioner is authorized to charge any such fee to our Deposit Account No. 50-3329. Please contact the undersigned if any further issues remain to be addressed in connection with this submission.

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Respectfully submitted,

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